

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

Cooling Equipment

Design Conditions

Outdoor design DB:	89.7°F	Sensible gain:	20132 Btuh	Entering coil DB:	75.0°F
Outdoor design WB:	72.4°F	Latent gain:	3947 Btuh	Entering coil WB:	62.5°F
Indoor design DB:	75.0°F	Total gain:	24079 Btuh		
Indoor RH:	50%	Estimated airflow:	1200 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP	Model:	GSZ140421K*+C(A,C,D,E)60A3G+GC9S801005C*A*+TDR
Manufacturer:	Goodman Mfg.		
Actual airflow:	1200 cfm		
Sensible capacity:	25200 Btuh	125% of load	
Latent capacity:	10800 Btuh	274% of load	
Total capacity:	36000 Btuh	150% of load	SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	13.8°F	Heat loss:	27272 Btuh	Entering coil DB:	68.0°F
Indoor design DB:	68.0°F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP	Model:	GSZ140421K*+C(A,C,D,E)60A3G+GC9S801005C*A*+TDR
Manufacturer:	Goodman Mfg.		
Actual airflow:	1200 cfm		
Output capacity:	38500 Btuh	141% of load	Capacity balance: 13 °F
Supplemental heat required:	0 Btuh		Economic balance: -99 °F

Meets all requirements of ACCA Manual S.

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

Cooling Equipment

Design Conditions

Outdoor design DB:	89.7°F	Sensible gain:	14489 Btuh	Entering coil DB:	75.0°F
Outdoor design WB:	72.4°F	Latent gain:	2622 Btuh	Entering coil WB:	62.5°F
Indoor design DB:	75.0°F	Total gain:	17111 Btuh		
Indoor RH:	50%	Estimated airflow:	1067 cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP	Model:	GSZ140361K*+C(A,C,D,E)42C3G+G*VC960603BNA*+TDR
Manufacturer:	Goodman Mfg.		
Actual airflow:	1067 cfm		
Sensible capacity:	22400 Btuh	155% of load	
Latent capacity:	9600 Btuh	366% of load	
Total capacity:	32000 Btuh	187% of load	SHR: 70%

Heating Equipment

Design Conditions

Outdoor design DB:	13.8°F	Heat loss:	18681 Btuh	Entering coil DB:	68.0°F
Indoor design DB:	68.0°F				

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP	Model:	GSZ140361K*+C(A,C,D,E)42C3G+G*VC960603BNA*+TDR
Manufacturer:	Goodman Mfg.		
Actual airflow:	1067 cfm		
Output capacity:	32800 Btuh	176% of load	Capacity balance: 7.8 °F
Supplemental heat required:	0 Btuh		Economic balance: -99 °F

Meets all requirements of ACCA Manual S.

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1
15 Mar 09

Header Information

Contractor:

Mechanical license:

Building plan #:

Home address (Street or Lot#, Block, Subdivision): 46 N 16th St, AHU-01

REQUIRED ATTACHMENTS

Manual J1 Form (and supporting worksheets):
or MJ1AE Form* (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution sketch:

ATTACHED

Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature: 14 °F
Indoor temperature: 68 °F
Total heat loss: 27272 Btuh

Summer Design Conditions

Outdoor temperature: 90 °F
Indoor temperature: 75 °F
Grains difference: 28 gr/lb @ 50% RH
Sensible heat gain: 21259 Btuh
Latent heat gain: 4168 Btuh
Total heat gain: 25427 Btuh

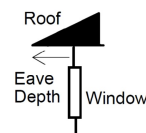
Building Construction Information

Building

Orientation: Front Door faces North
North, East, West, South, Northeast, Northwest, Southeast, Southwest
Number of bedrooms: 2
Conditioned floor area: 3269 ft²
Number of occupants: 11

Windows

Eave overhang depth: 0 ft
Internal shade: none
Blinds, drapes, etc.
Number of skylights: 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type: Split ASHP
Furnace, Heat pump, Boiler, etc.
Model: Goodman Mfg.
GSZ140421K*
Heating output capacity: 0 Btuh
Heat pumps - capacity at winter design outdoor conditions
Aux. heating output capacity: 0 Btuh

Cooling Equipment Data

Equipment type: Split ASHP
Air Conditioner, Heat pump, etc.
Model: Goodman Mfg.
GSZ140421K*
Total cooling capacity: 0 Btuh
Sensible cooling capacity: 0 Btuh
Latent cooling capacity: 0 Btuh

Blower Data

Heating cfm: 1200
Cooling cfm: 1200
Static pressure: 0.30 in H2O
Fan's rated external static pressure for design airflow

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow: 1200 cfm
Equipment design ESP: 0.30 in H2O
Total device pressure losses: 0 in H2O
Available static pressure (ASP): 0.30 in H2O
Longest supply duct: 262 ft
Longest return duct: 185 ft
Total effective length (TEL): 447 ft
Friction rate: 0.067 in/100ft
Duct Materials Used
Trunk duct: Round flex metal
Branch duct: Round flex metal, Sheet metal
Friction Rate = ASP ÷ (TEL x 100)

I declare the load calculation, equipment, equipment selection and duct design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's printed name: _____

Contractor's signature: _____

Date: _____

Reserved for County, Town Municipality or Authority having jurisdiction use.

*Home qualifies for MJ1AE Form based on Abridged Edition Checklist

Residential Plans Examiner Review Form for HVAC System Design (Loads, Equipment, Ducts)

Form
RPER 1
15 Mar 09

Header Information

Contractor:

Mechanical license:

Building plan #:

Home address (Street or Lot#, Block, Subdivision): 46 N 16th St, AHU-02

REQUIRED ATTACHMENTS

Manual J1 Form (and supporting worksheets):
or MJ1AE Form* (and supporting worksheets):
OEM performance data (heating, cooling, blower):
Manual D Friction Rate Worksheet:
Duct distribution sketch:

ATTACHED

Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐
Yes ☐ No ☐

HVAC LOAD CALCULATION (IRC M1401.3)

Design Conditions

Winter Design Conditions

Outdoor temperature: 14 °F
Indoor temperature: 68 °F
Total heat loss: 18681 Btuh

Summer Design Conditions

Outdoor temperature: 90 °F
Indoor temperature: 75 °F
Grains difference: 28 gr/lb @ 50% RH
Sensible heat gain: 15300 Btuh
Latent heat gain: 2769 Btuh
Total heat gain: 18069 Btuh

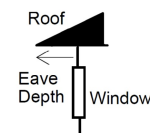
Building Construction Information

Building

Orientation: Front Door faces North
North, East, West, South, Northeast, Northwest, Southeast, Southwest
Number of bedrooms: 1
Conditioned floor area: 1946 ft²
Number of occupants: 8

Windows

Eave overhang depth: 0 ft
Internal shade: none
Blinds, drapes, etc.
Number of skylights: 0



HVAC EQUIPMENT SELECTION (IRC M1401.3)

Heating Equipment Data

Equipment type: Split ASHP
Furnace, Heat pump, Boiler, etc.
Model: Goodman Mfg.
GSZ140361K*
Heating output capacity: 0 Btuh
Heat pumps - capacity at winter design outdoor conditions
Aux. heating output capacity: 0 Btuh

Cooling Equipment Data

Equipment type: Split ASHP
Air Conditioner, Heat pump, etc.
Model: Goodman Mfg.
GSZ140361K*
Total cooling capacity: 0 Btuh
Sensible cooling capacity: 0 Btuh
Latent cooling capacity: 0 Btuh

Blower Data

Heating cfm: 1067
Cooling cfm: 1067
Static pressure: 0.30 in H2O
Fan's rated external static pressure for design airflow

HVAC DUCT DISTRIBUTION SYSTEM DESIGN (IRC M1601.1)

Design airflow: 1067 cfm
Equipment design ESP: 0.30 in H2O
Total device pressure losses: 0 in H2O
Available static pressure (ASP): 0.30 in H2O
Longest supply duct: 391 ft
Longest return duct: 112 ft
Total effective length (TEL): 503 ft
Friction rate: 0.060 in/100ft
Duct Materials Used
Trunk duct: Round flex metal
Branch duct: Round flex metal
Friction Rate = ASP ÷ (TEL x 100)

I declare the load calculation, equipment, equipment selection and duct design were rigorously performed based on the building plan listed above. I understand the claims made on these forms will be subject to review and verification.

Contractor's printed name: _____

Contractor's signature: _____

Date: _____

Reserved for County, Town Municipality or Authority having jurisdiction use.

*Home qualifies for MJ1AE Form based on Abridged Edition Checklist

Infiltration Summary

ZONE NAME	Heating				Cooling			
	Volume ft³	ACH	AVF cfm	HTM Btuh/ft²	Volume ft³	ACH	AVF cfm	HTM Btuh/ft²
AHU-02	17512	0.37	107	3.3	17512	0.19	55	0.5
AHU-01	29423	0.37	183	3.3	29423	0.19	94	0.5
Entire House	46935	0.37	289	3.3	46935	0.19	149	0.5

Load and AVF Summary

ROOM NAME	Area ft²	Htg load Btuh	Clg load Btuh	Htg AVF cfm	Clg AVF cfm
Stairs 4`	92	2244	1482	128	109
Kitchen 2	167	1743	1553	100	114
Bath 3	81	533	86	30	6
M. Bedroom 2	243	2782	2589	159	191
Office 2	202	1425	1274	81	94
M. Closet 2	96	1139	214	65	16
M. Bath 2	90	753	255	43	19
Closet 3	28	0	0	0	0
Bedroom 2	216	1813	1603	104	118
Living 2	354	3269	3049	187	225
Dining 2	312	2863	2384	164	176
Hall 2	66	117	0	7	0
AHU-02	1946	18681	14489	1067	1067
Entry	256	3939	1079	173	64
Family Room	775	6410	3091	282	184
Bathroom	63	857	147	38	9
Stair 1	102	0	0	0	0
Stairs 2	93	0	0	0	0
Stairs 3	210	2340	1558	103	93
Kitchen	138	1267	1534	56	91
Office	145	934	1042	41	62
Living Room	357	3585	4117	158	245
Dining	290	1941	3028	85	180
Bath 2	88	686	152	30	9
M. Closet	113	1159	232	51	14
M. Bath	94	378	81	17	5
Bedroom 1	238	1515	1632	67	97
M. Bedroom	231	2264	2438	100	145
Hall	79	0	0	0	0
AHU-01	3269	27272	20132	1200	1200
Entire House	5215	45953	34621	2267	2267

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

Notes:

Design Information

Weather: Essex County AP, NJ, US

Winter Design Conditions

Outside db 14 °F
Inside db 68 °F
Design TD 54 °F

Summer Design Conditions

Outside db 90 °F
Inside db 75 °F
Design TD 15 °F
Daily range M
Relative humidity 50 %
Moisture difference 28 gr/lb

Heating Summary

Structure 45953 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh

Humidification 0 Btuh
Piping 0 Btuh
Equipment load 45953 Btuh

Sensible Cooling Equipment Load Sizing

Structure 34621 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh

Blower 0 Btuh

Use manufacturer's data n
Rate/swing multiplier 0.95
Equipment sensible load 32786 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 6569 Btuh
Ducts 0 Btuh
Central vent (0 cfm) 0 Btuh

Equipment latent load 6569 Btuh

	Heating	Cooling
Area (ft²)	5215	5215
Volume (ft³)	46935	46935
Air changes/hour	0.37	0.19
Equiv. AVF (cfm)	289	149

Equipment Total Load (Sen+Lat) 39355 Btuh
Req. total capacity at 0.70 SHR 3.9 ton

Heating Equipment Summary

Make n/a
Trade n/a
Model n/a
AHRI ref. n/a

Efficiency n/a
Heating input
Heating output 0 Btuh
Temperature rise 0 °F
Actual air flow 0 cfm
Air flow factor 0 cfm/Btuh
Static pressure 0 in H2O
Space thermostat n/a

Cooling Equipment Summary

Make n/a
Trade n/a
Cond n/a
Coil n/a
AHRI ref. n/a
Efficiency n/a
Sensible cooling 0 Btuh
Latent cooling 0 Btuh
Total cooling 0 Btuh
Actual air flow 0 cfm
Air flow factor 0 cfm/Btuh
Static pressure 0 in H2O
Load sensible heat ratio 0

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

Notes:

Design Information

Weather: Essex County AP, NJ, US

Winter Design Conditions

Outside db 14 °F
Inside db 68 °F
Design TD 54 °F

Summer Design Conditions

Outside db 90 °F
Inside db 75 °F
Design TD 15 °F
Daily range M
Relative humidity 50 %
Moisture difference 28 gr/lb

Heating Summary

Structure 27272 Btuh
Ducts 0 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 27272 Btuh

Sensible Cooling Equipment Load Sizing

Structure 20132 Btuh
Ducts 0 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.95
Equipment sensible load 19065 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 3947 Btuh
Ducts 0 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Equipment latent load 3947 Btuh

	Heating	Cooling
Area (ft²)	3269	3269
Volume (ft³)	29423	29423
Air changes/hour	0.37	0.19
Equiv. AVF (cfm)	183	94

Equipment Total Load (Sen+Lat) 23012 Btuh
Req. total capacity at 0.70 SHR 2.3 ton

Heating Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Model GSZ140421K*
AHRI ref 207726028
Efficiency 8.2 HSPF
Heating input 38500 Btuh @ 47°F
Heating output 29 °F
Temperature rise 1200 cfm
Actual air flow 0.044 cfm/Btuh
Air flow factor 0.30 in H2O
Static pressure
Space thermostat
Capacity balance point = 13 °F

Cooling Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Cond GSZ140421K*
Coil C(A,C,D,E)60A3G+GC9S801005C*A*+TDR
AHRI ref 207726028
Efficiency 12.3 EER, 14 SEER
Sensible cooling 25200 Btuh
Latent cooling 10800 Btuh
Total cooling 36000 Btuh
Actual air flow 1200 cfm
Air flow factor 0.060 cfm/Btuh
Static pressure 0.30 in H2O
Load sensible heat ratio 0.84

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

Notes:

Design Information

Weather: Essex County AP, NJ, US

Winter Design Conditions

Outside db 14 °F
Inside db 68 °F
Design TD 54 °F

Summer Design Conditions

Outside db 90 °F
Inside db 75 °F
Design TD 15 °F
Daily range M
Relative humidity 50 %
Moisture difference 28 gr/lb

Heating Summary

Structure 18681 Btuh
Ducts 0 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 18681 Btuh

Sensible Cooling Equipment Load Sizing

Structure 14489 Btuh
Ducts 0 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.95
Equipment sensible load 13721 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

Latent Cooling Equipment Load Sizing

Structure 2622 Btuh
Ducts 0 Btuh
Central vent (0 cfm)
(none) 0 Btuh
Equipment latent load 2622 Btuh

	Heating	Cooling
Area (ft²)	1946	1946
Volume (ft³)	17512	17512
Air changes/hour	0.37	0.19
Equiv. AVF (cfm)	107	55

Equipment Total Load (Sen+Lat) 16343 Btuh
Req. total capacity at 0.70 SHR 1.6 ton

Heating Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Model GSZ140361K*
AHRI ref 201664535
Efficiency 8.6 HSPF
Heating input
Heating output 32800 Btuh @ 47°F
Temperature rise 28 °F
Actual air flow 1067 cfm
Air flow factor 0.057 cfm/Btuh
Static pressure 0.30 in H2O
Space thermostat
Capacity balance point = 8 °F

Cooling Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Cond GSZ140361K*
Coil C(A,C,D,E)42C3G+G*VC960603BNA*+TDR
AHRI ref 201664535
Efficiency 11.5 EER, 14 SEER
Sensible cooling 22400 Btuh
Latent cooling 9600 Btuh
Total cooling 32000 Btuh
Actual air flow 1067 cfm
Air flow factor 0.074 cfm/Btuh
Static pressure 0.30 in H2O
Load sensible heat ratio 0.85

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

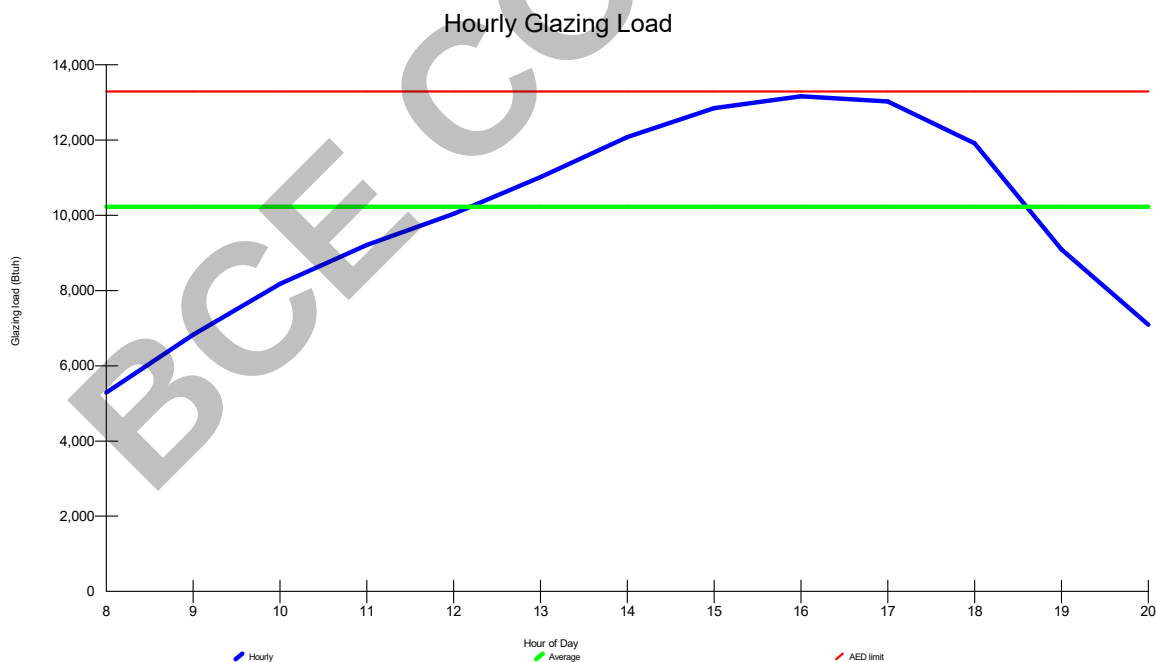
Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

Design Conditions

Location:		Indoor:		Heating	Cooling
Essex County AP, NJ, US		Indoor temperature (°F)		68	75
Elevation: 173 ft		Design TD (°F)		54	15
Latitude: 41°N		Relative humidity (%)		50	50
		Moisture difference (gr/lb)		42.3	27.6
Outdoor:		Heating	Cooling	Infiltration:	
Dry bulb (°F)		14	90		
Daily range (°F)		-	19 (M)		
Wet bulb (°F)		-	72		
Wind speed (mph)		15.0	7.5		

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 28.7%.

House has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btuh

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

Design Conditions

Location:

Essex County AP, NJ, US
Elevation: 173 ft
Latitude: 41°N

Outdoor:

Dry bulb (°F)
Daily range (°F)
Wet bulb (°F)
Wind speed (mph)

Heating

14
-
-
15.0

Cooling

90
19 (M)
72
7.5

Indoor:

Indoor temperature (°F)
Design TD (°F)
Relative humidity (%)
Moisture difference (gr/lb)

Heating

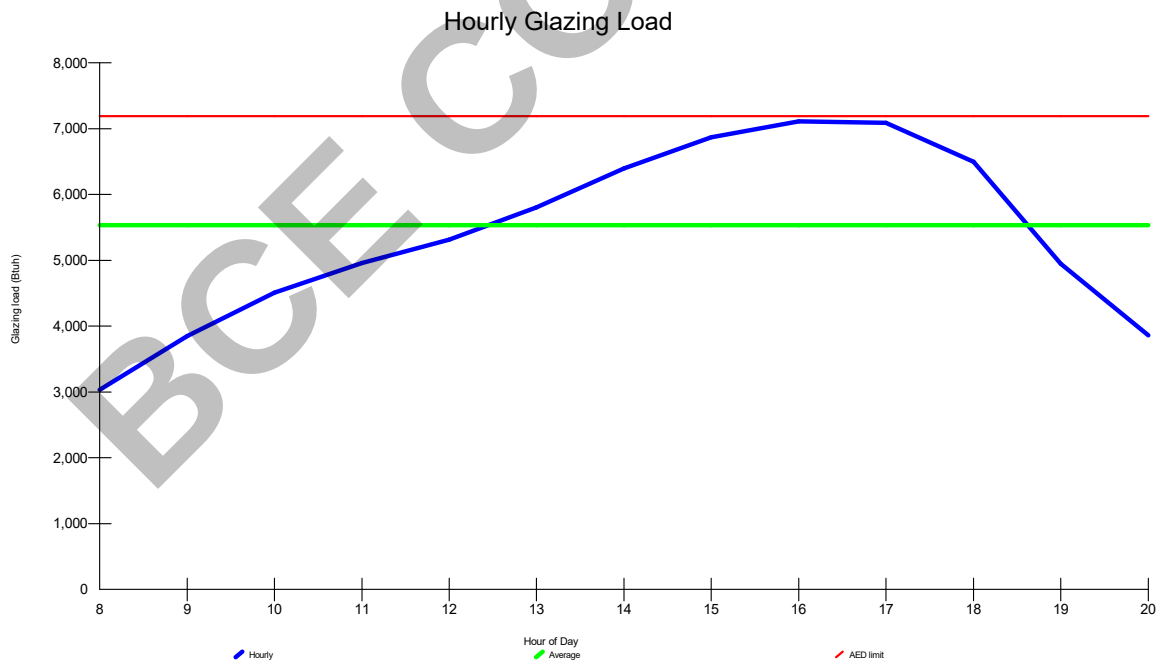
68
54
50
42.3

Cooling

75
15
50
27.6

Infiltration:

Test for Adequate Exposure Diversity



Maximum hourly glazing load exceeds average by 28.5%.

Zone has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btuh

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

Design Conditions

Location:

Essex County AP, NJ, US
Elevation: 173 ft
Latitude: 41°N

Outdoor:

Dry bulb (°F)
Daily range (°F)
Wet bulb (°F)
Wind speed (mph)

Heating

14
-
-
15.0

Cooling

90
19 (M)
72
7.5

Indoor:

Indoor temperature (°F)
Design TD (°F)
Relative humidity (%)
Moisture difference (gr/lb)

Heating

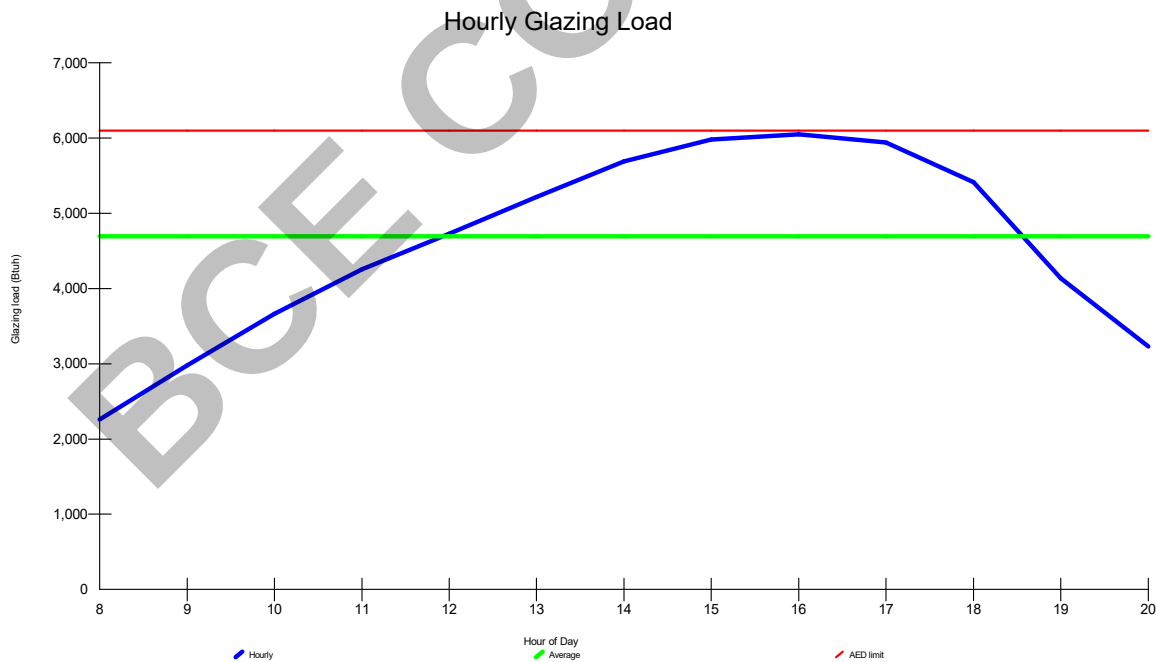
68
54
50
42.3

Cooling

75
15
50
27.6

Infiltration:

Test for Adequate Exposure Diversity



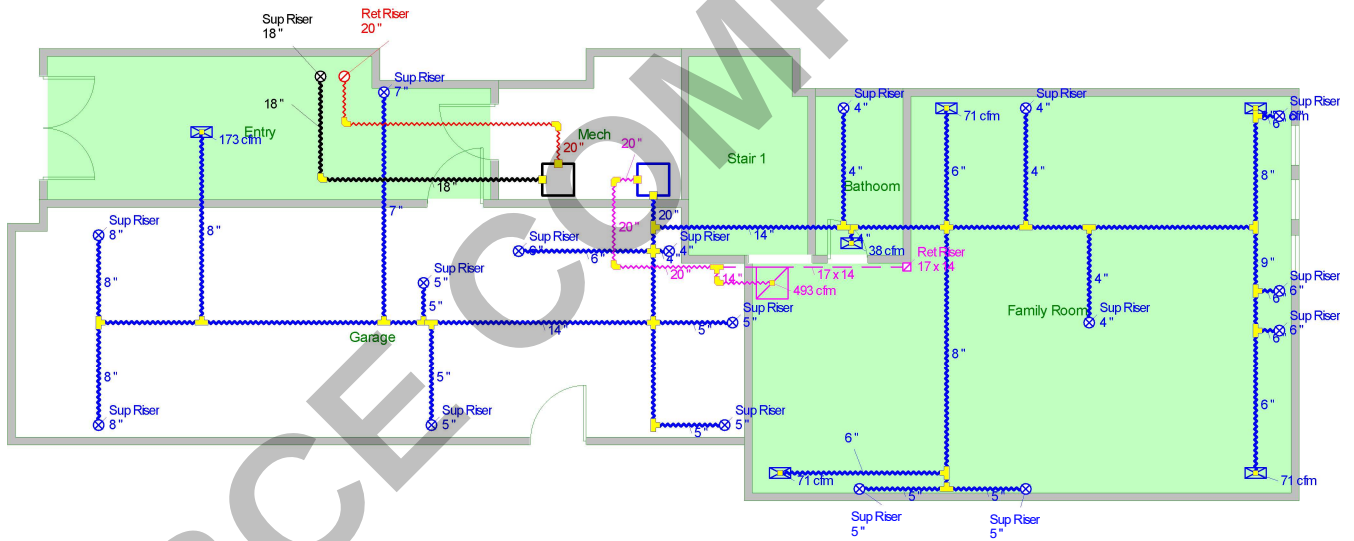
Maximum hourly glazing load exceeds average by 28.9%.

Zone has adequate exposure diversity (AED), based on AED limit of 30%.

AED excursion: 0 Btu/h



F1



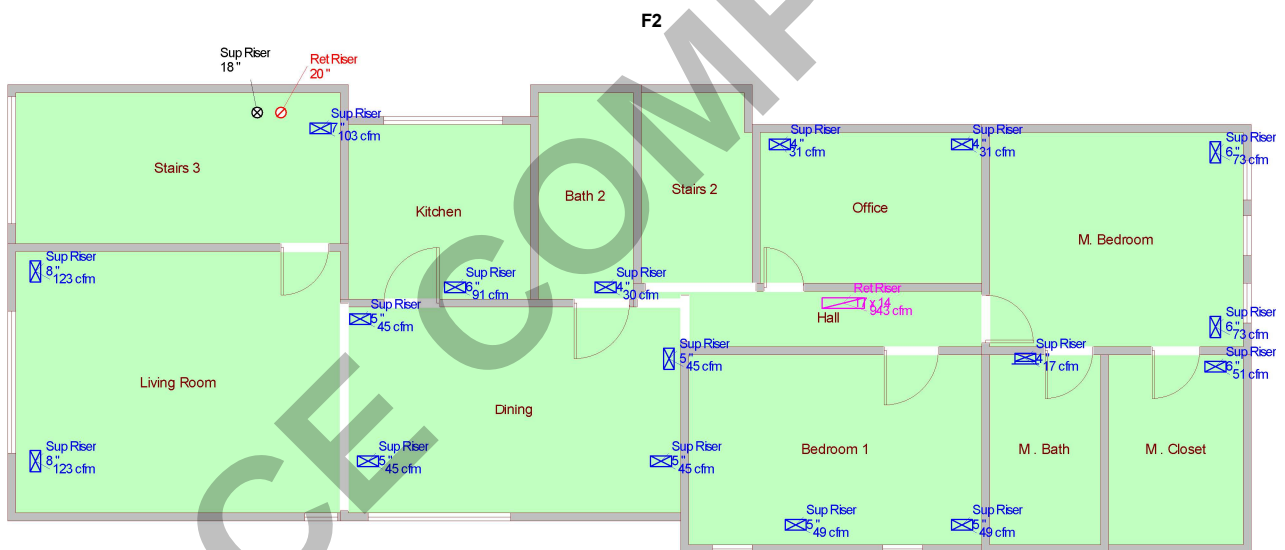
Job #: 21051

Performed for:

New Construction of a 3 Story 2 Family
46 N 16th St
East Orange, NJ 07017

Scale: 1 : 146

Page 1
Right-Suite® Universal 2022
22.0.07 RSU62812
2023-Mar-28 19:57:00
...thony\Manual JSD - 46N 16 St.rup



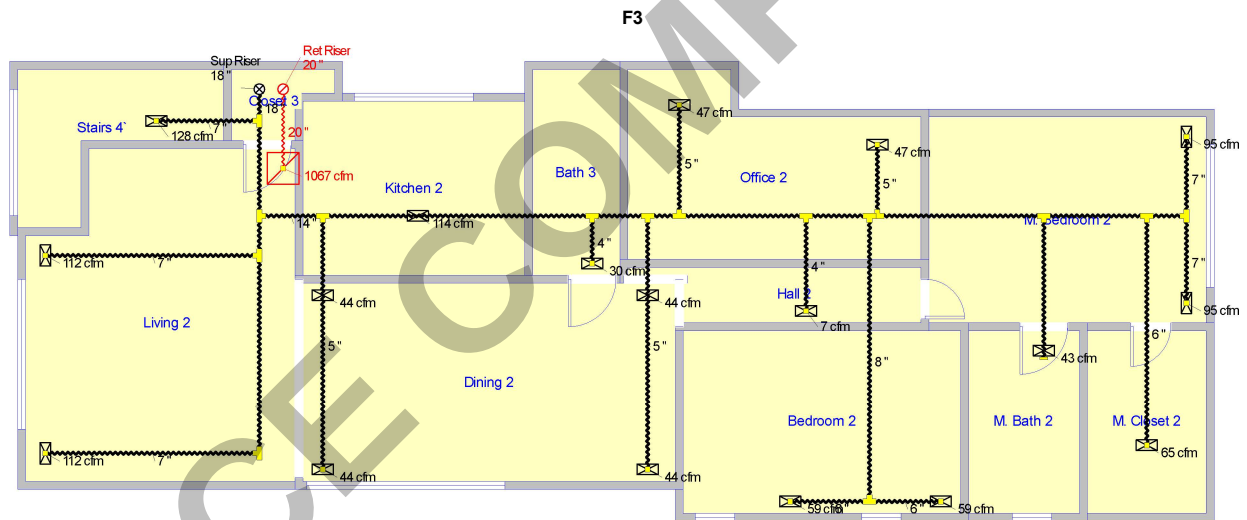
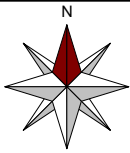
Job #: 21051

Performed for:

New Construction of a 3 Story 2 Family
46 N 16th St
East Orange,, NJ 07017

Scale: 1 : 146

Page 2
Right-Suite® Universal 2022
22.0.07 RSU62812
2023-Mar-28 19:57:01
...thony\Manual JSD - 46N 16 St.rup



Job #: 21051

Performed for:

New Construction of a 3 Story 2 Family
46 N 16th St
East Orange,, NJ 07017

Scale: 1 : 146

Page 3
Right-Suite® Universal 2022
22.0.07 RSU62812
2023-Mar-28 19:57:01
...thony\Manual JSD - 46N 16 St.rup

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0.30 in H2O	0.30 in H2O
Supply / return available pressure	0.176 / 0.124 in H2O	0.176 / 0.124 in H2O
Lowest friction rate	0.067 in/100ft	0.067 in/100ft
Actual air flow	1200 cfm	1200 cfm
Total effective length (TEL)	447 ft	

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
Bath2	h 686	30	9	0.155	4.0	0x 0	MtFx	13.5	100.0	st1
Bathroom	h 857	38	9	0.135	4.0	0x 0	MtFx	15.5	115.0	st3
Bedroom 1	c 816	33	49	0.083	5.0	0x 0	MtFx	51.5	160.0	st4
Bedroom 1-A	c 816	33	49	0.083	5.0	0x 0	MtFx	51.0	160.0	st4
Dining	c 757	21	45	0.098	5.0	0x 0	MtFx	34.0	145.0	st7
Dining-A	c 757	21	45	0.115	5.0	0x 0	MtFx	28.0	125.0	st1
Dining-B	c 757	21	45	0.105	5.0	0x 0	MtFx	37.5	130.0	st7
Dining-C	c 757	21	45	0.128	5.0	0x 0	MtFx	22.0	115.0	st1
Entry	h 3939	173	64	0.079	8.0	0x 0	MtFx	48.5	175.0	st7
Family Room	h 1602	71	46	0.074	6.0	0x 0	MtFx	47.5	190.0	st5
Family Room-A	h 1602	71	46	0.111	6.0	0x 0	MtFx	28.0	130.0	st3
Family Room-B	h 1602	71	46	0.068	6.0	0x 0	MtFx	55.5	205.0	st6
Family Room-C	h 1602	71	46	0.092	6.0	0x 0	MtFx	46.5	145.0	st4
Kitchen	c 1534	56	91	0.145	6.0	0x 0	MtFx	21.0	100.0	st1
Living Room	c 2058	79	123	0.071	8.0	0x 0	MtFx	57.5	190.0	st7
Living Room-A	c 2058	79	123	0.071	8.0	0x 0	MtFx	58.5	190.0	st7
M. Bath	h 378	17	5	0.086	4.0	0x 0	MtFx	44.5	160.0	st3
M. Closet	h 1159	51	14	0.067	6.0	0x 0	MtFx	57.0	205.0	st6
M. Bedroom	c 1219	50	73	0.071	6.0	0x 0	MtFx	57.5	190.0	st5
M. Bedroom-A	c 1219	50	73	0.072	6.0	0x 0	MtFx	54.5	190.0	st6
Office	c 521	21	31	0.135	4.0	0x 0	MtFx	30.5	100.0	st3
Office-A	c 521	21	31	0.094	4.0	0x 0	MtFx	42.0	145.0	st3
Stairs 3	h 2340	103	93	0.084	7.0	0x 0	MtFx	48.5	160.0	st7

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st3	Peak AVF	595	516	0.067	556	14.0	0 x 0	MetlFlx	st1
st7	Peak AVF	477	493	0.071	461	14.0	0 x 0	MetlFlx	st1
st5	Peak AVF	120	119	0.071	345	8.0	0 x 0	MetlFlx	st3
st6	Peak AVF	171	133	0.067	388	9.0	0 x 0	MetlFlx	st3
st4	Peak AVF	137	143	0.083	411	8.0	0 x 0	MetlFlx	st3
st1	Peak AVF	1200	1200	0.067	550	20.0	0 x 0	MetlFlx	

Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb3	0x 0	707	943	184.5	0.067	570	14.6	14x 17		ShMt	rt4
rb2	0x 0	493	257	178.0	0.070	461	14.0	0x 0		MtFx	rt4

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt4	Peak AVF	1200	1200	0.067	550	20.0	0 x 0	MetlFlx	rt3
rt3	Peak AVF	1200	1200	0.067	550	20.0	0 x 0	MetlFlx	rt1
rt1	Peak AVF	1200	1200	0.067	550	20.0	0 x 0	MetlFlx	

Project Information

For: New Construction of a 3 Story 2 Family, DDB Consultants
46 N 16th St, East Orange,, NJ 07017

	Heating	Cooling
External static pressure	0.30 in H2O	0.30 in H2O
Pressure losses	0 in H2O	0 in H2O
Available static pressure	0.30 in H2O	0.30 in H2O
Supply / return available pressure	0.233 / 0.067 in H2O	0.233 / 0.067 in H2O
Lowest friction rate	0.060 in/100ft	0.060 in/100ft
Actual air flow	1067 cfm	1067 cfm
Total effective length (TEL)	503 ft	

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
Bath 3	h 533	30	6	0.101	4.0	0x 0	MtFx	70.5	160.0	st9
Bedroom 2	c 802	52	59	0.068	6.0	0x 0	MtFx	108.0	235.0	st11
Bedroom 2-A	c 802	52	59	0.068	6.0	0x 0	MtFx	107.5	235.0	st11
Dining 2	c 596	41	44	0	0	0x 0	MtFx	0	0	
Dining 2-A	c 596	41	44	0.089	5.0	0x 0	MtFx	87.0	175.0	st9
Dining 2-B	c 596	41	44	0.110	5.0	0x 0	MtFx	66.5	145.0	st9
Dining 2-C	c 596	41	44	0	0	0x 0	MtFx	0	0	
Hall 2	h 117	7	0	0.080	4.0	0x 0	MtFx	87.0	205.0	st9
Kitchen 2	c 1553	100	114	0	0	0x 0	MtFx	0	0	
Living 2	c 1524	93	112	0.101	7.0	0x 0	MtFx	75.0	155.0	st8
Living 2-A	c 1524	93	112	0.112	7.0	0x 0	MtFx	62.5	145.0	st8
M. Bath 2	h 255	43	19	0	0	0x 0	MtFx	0	0	
M. Bedroom 2-A	c 1294	79	95	0.060	7.0	0x 0	MtFx	110.0	280.0	st9
M. Bedroom 2-B	c 1294	79	95	0.060	7.0	0x 0	MtFx	110.5	280.0	st9
M. Closet 2	h 1139	65	16	0.061	6.0	0x 0	MtFx	117.0	265.0	st9
Office 2	c 637	41	47	0.072	5.0	0x 0	MtFx	90.0	235.0	st9
Office 2-A	c 637	41	47	0.086	5.0	0x 0	MtFx	80.0	190.0	st9
Stairs 4'	h 2244	128	109	0.144	7.0	0x 0	MtFx	47.0	115.0	st8

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st9	Peak AVF	528	512	0.060	494	14.0	0 x 0	MetlFlx	st8
st8	Peak AVF	843	846	0.060	479	18.0	0 x 0	MetlFlx	st2
st11	Peak AVF	104	118	0.068	338	8.0	0 x 0	MetlFlx	st9
st2	Peak AVF	843	846	0.060	479	18.0	0 x 0	MetlFlx	

Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb1	0x0	1067	1067	112.0	0.060	489	20.0	0x0		MtFx	